CARBOHYDRATES AND LIPIDS IMPACT ON CONSUMER HEALTH IN NORTH-EAST REGION OF ROMANIA

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Abstract

This study was conducted at IRO Iasi, which observed that the number of cancer patients has increased dramatically over the period 2014-2016 and the age of patients dropped from 46-65 to 31- 45 years. We used for the experimental part 17 sweets made with sugar and fat and 4 samples of edible oils, that we considered to be the most widely used in food daily. Content of sucrose consumed by sweets agreed in N-E Region of Romania (pastry, ice cream, candy) is a driver of obesity and cancer. Moreover, medical science tells us today that the sucrose allows spectacular evolution of cancerous cells, which represent a clear threat to the health of consumers of sweets

I have devoted my time to the study of a great many branches of science and to the examination of the multifarious sources of knowledge, from the fundamental and general principles of which I have been able to draw certain essential, vital conclusions. My incentive has been in the first place the wish to do my best for the recovery of the health of people regarding the nutrition, and later the ardent desire to perpetuate their memory by being useful to humanity

The oils studied are used in the manufacturing of pastry, especially their hydrogenated and saturated form, after the eliminating the hydrogenation process, the essential nutrients such as linoleic acid, oleic acid. Consequently, pastry sweets contain mostly hydrogenated fats, which are in Class cholesterol lipids type

Key words: education, nutrition and healthy

In the material world, the smallest deviation from the details developed by an engineer for the smooth working of the mechanism of a factory, or a fault in the raw materials specified to ensure its normal productivity, results in a corresponding breakdown in the operation of the plant. In the same way, the slightest deterioration or alteration in the raw materials prescribed by nature to ensure the smooth operation of the complicated processes of the human organism causes disorders in the normal biological functions of our organs and these disorders appear in the form of diseases.

Every degeneration in the quality of natural foodstuffs is followed by a corresponding degeneration in the human organism. Natural nutrition ensures the normal operation, of our organism, while unnatural nutrition is followed by an abnormal discharge of its functions. The multiplicity of illnesses is the result of the great diversity of degeneration in the constituents of natural foodstuffs. Provided that all its needs are satisfied by the laws of nature, the human organism, which is the most perfect organism (Davydovsky I.V., 1998).

I have studied a wide assortment of different types of sweets. The distribution of the sugar in the sweets shows the level of sucrose (5.88% apple strudel to 60.71% candy). All these sweets we eat almost every day and consequently the effect of cholesterol accumulation occurs constantly. Regarding lipids consumed by humans, they may consist of saturated fatty acids, the most harmful to consumer health, present in all edible oils, sweets (2.25% apple strudel – 22% ice cream), monounsaturated fatty acids present in edible oils and sweets (cocoa butter 4.44%- candy - 39.94% hazelnut chocolate) as a result of their preparation and their use in the unsaturated fatty acids beneficial to human health. The cumulative effect of the conversion of carbohydrates into lipids which produces cholesterol because currently generates early chronic disease: obesity, cardiovascular, carcinogens.

MATERIAL AND METHOD

The experimental was initiated to the IRO Iasi survey, which showed that the number of cancer patients has increased dramatically over the period 2014-2016, then dropped the age of patients

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46-65 years, 31- 45 years, and their attention is not attended to their quality of food. Therefore, I studied a total of 17 sweets made with sugar and fat and 4 samples of edible oils, that we considered to be the most widely used in food daily. The flour products and oils are basic food reason of their energy /calories with their daily nutrients apported from diet. The content of carbohydrates, sucrose sweets has determined by means of iodometric method and the content of lipids has determined by extraction methods with a mixture of solvents (Soxhlet) and the SPE method - separating the classes of lipids column, by revealing the lipid fractions by gently spraying with alfanaftol and H2SO4.

RESULTS AND DISCUSSIONS

It has been estimated experimentally by comparative analysis of different kinds of sweets and edible oils most commonly employed consumers have the following results:

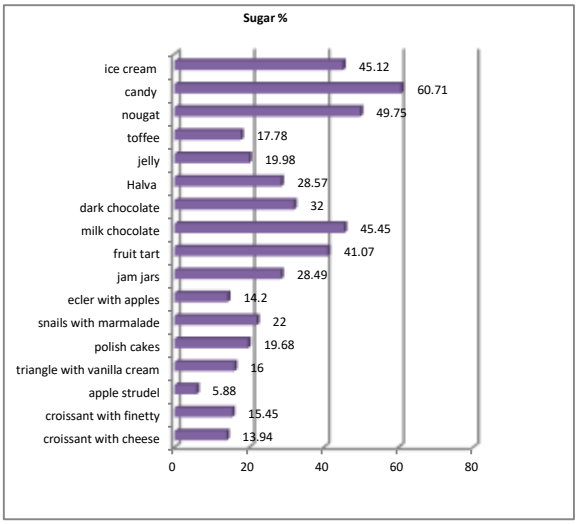

Figure 1 **Distribution of sugar % in the sweets**

The distribution of the sugar in the sweets shows that sucrose ranging from 5.88% to 13.94% apple strudel to the croissants -15.45%, 14.2% to eclair, 17.78% candy truffles, 19, 98% in jelly, jam rolls 28,49%, halva 28,57% , fruit tart 41.07%, from 32.00 to 45.05% for the varieties of chocolate, ice cream 45.12%, nougat 49.75%, candy 60.71%.(figure1) These sweets are daily consumed and accordingly the effect of the accumulation of cholesterol produced by transformation of sweets sugar constant in cholesterol-type lipids. Next, I have examined the content of saturated and unsaturated lipids through of the sweets. Regarding lipids consumed by humans, they may consist of saturated fatty acids, the most harmful to consumer health, present in all edible oils, sweets (2.25% apple strudel with ice cream, 22%), monounsaturated fatty acids present in edible oils and confectionery (candy, cocoa butter 4.44 -39.94% hazelnut chocolate) as a result of their preparation and their use in the unsaturated fatty acids beneficial to human health (Figure 2). The cumulative effect of the sugar by conversion of carbohydrates into lipids and lipids which produce cholesterol generates chronic disease like as: obesity, cardiovascular, carcinogenes.

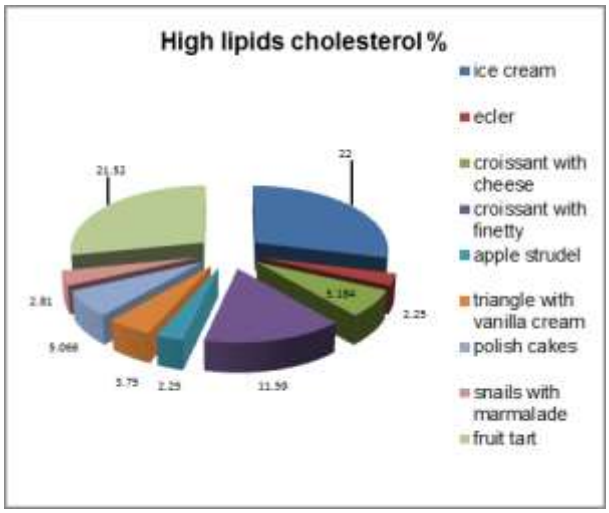

Figure 2 **Distribution of high lipids cholesterols % in the sweets**

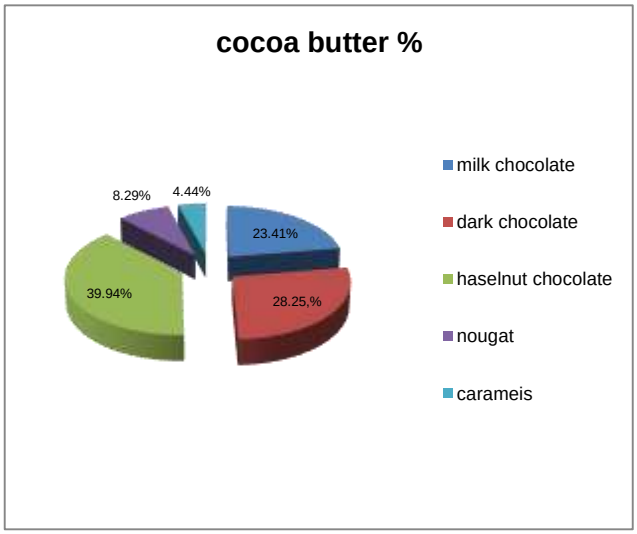

Figure 3 **Distribution of low colesterol (cocoa butter) in the sweets**

The scientific researches of modern medicine tell us that dietary factors contribute to chronic disease and the fats consume is a result of obesity installation.

Therefore, I have studied the edible oils made from sunflower, olive, rapeseed and

soybeans, which also represents a significant share in manufacturing recipes of sweets type pastry, ice cream. These oils are used in the manufacturing of sweets in hydrogenated form, especially that of their saturated form, thus eliminating the essential nutrients linoleic acid, oleic acid. (table1, figure 4)

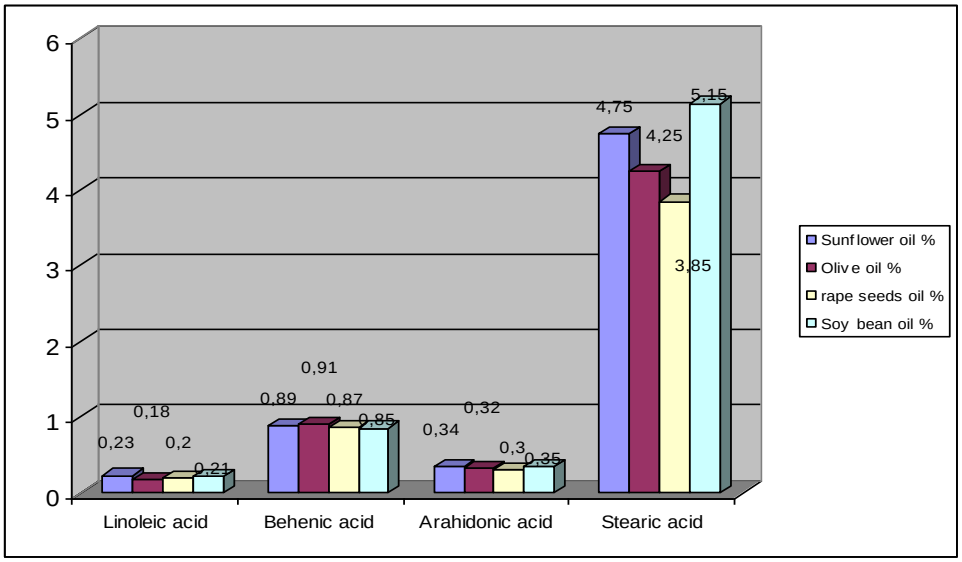

Figure 4 **The dynamic of saturated acids through edible oils**

Table 1

The content of saturated oil acids at the eatable oils

Fat acids	No. of carbon atoms	Sample 1 sun flower oil %	Sample 2 olive oil %	Sample 3 rape seeds oil %	Proba 4 soy beans oil %
Linolenic acid	C24:0	0.23	0.18	0.20	0.21
Behenic acid	C22:0	0.89	0.91	0.87	0.85
Arahidonic acid	C20:0	0.34	0.32	0.3	0.35
Stearic acid	C18:0	4.75	4.25	3.85	5.15
Total saturated acid		6.21	5.66	2.22	8.78

Table 2

Content of monounsaturated acids at the eatable oils

Fat acids	No. of carbon atoms	Sun flower oil %	Olive oil %	Rape seeds oil %	Soy beans oil %
Gadoleic acid	C20:1	0.1	0.2	0.15	0.21
Oleic acid	C18:1	19.8	18.85	19.32	18.75
Linoleic acid	C18:2	67	68.1	67.9	68.5
Heptadecanoic acid	C17:1	0.01	0.02	0.015	0.02
Palmitoleic acid	C16:1	0.08	0.084	0.081	0.079
Unsaturated acid		86.99	87.254	87.385	87.559

Table 3

Pearson correlations for optimization of lipids from eatable oils

Fat acids	No. of carbon atoms	Sunflower oil %	Olive oil %	Rape seeds oil %	Soy bean oil %	Sun flower oil	Olive oil %	Rape seeds oil %	Soy beans oil %
Linolenic acid	C24:0	0.23	0.18	0.2	0.21	0.99758	0.998541	0.996552	0.9978921
Behenic acid	C22:0	0.89	0.91	0.87	0.85	0.999506	0.9999537	0.99995365	0.9987936
Arahidonic acid	C20:0	0.34	0.32	0.3	0.35	0.999563	0.9999506	0.99995059	0.9988530
Stearic acid	C18:0	4.75	4.25	3.85	5.15	0.999718	0.9999639	0.99996392	0.9992819
Gadoleic acid	C20:1	0.23	0.18	0.2	0.21	0.999686	0.9999706	0.99997058	0.9992345
Oleic acid	C18:1	0.89	0.91	0.87	0.85	0.999506	0.9999537	0.99995365	0.9987936
Linoleic acid	C18:2	0.34	0.32	0.3	0.35	0.999688	0.9999459	0.99994589	0.9989981
Heptadecanoic acid	C17:1	4.75	4.25	3.85	5.15	1	1	1	1

The quality of the oil obtained from sunflower seeds is determined by the presence of fat acids in the following proportion: saturated (C 16:0 and C18: 0 stearic acid), mono-non-saturated (C18:1 – oleic acid), poly-non-saturated (C18:2 – linoleic acid). The results shows that transformation of saturated fatty acids into non saturated fatty acids was determined by the presence of three enzymes: stearil-steroil – ACP enzymes, which is codified by nucleus, is found in plastides stroma and it indicates formation of the first double connection in the fat acid chain, resulting oleil – ACP; Oleoil–PC desaturaza was identified in microsomes fractions and determines oleoil desaturation-phospho-tidil-coleina in formation of linoleic–phospha-tidil- colina.

The reserve lipids are deposited into sfero-somes, with the form of tri-glicerids and represents 17-22% from the dry substance of the seeds. Sfero-somes membrane is made up from phosphor-lipids called oleozines and proteins.(table 2)

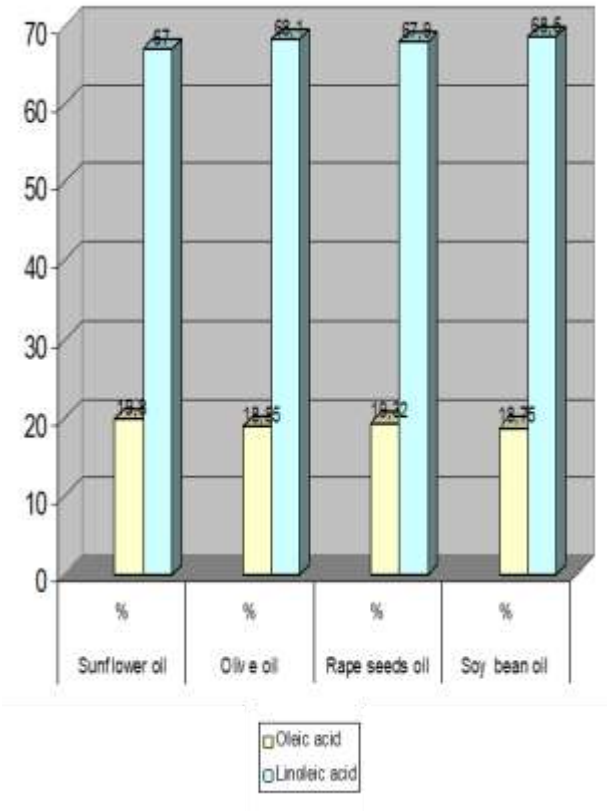

Figure 5 **The dynamic of unsaturated acids through edible oils**

The quality of soybeans oil is owned in a great measure to the content of linoleic acid, which gives a non-corresponding smell and its instability.

The content of linoleic acid of soybeans oil varies between 8-9% and only in case of mutagenesis decreases to 6.2%. In order to improve the quality of beans oil it is necessary to reduce the content of saturated fat acids, respectively into palmitic acid and fat poly-non-saturated acids (linoleic acid) which determines oxidative instability. The oil extracted from the seeds of those lines contains at least with 4.6-5% less linolenic acid, the content of stearic and linoleic acid was significantly higher, the content of palmitic and oleic acid remained unchanged and the oxidative stability of the oil was higher. Per-oxidation of lipids from soy beans can determine deterioration of their quality. Setting free of fatty acids from plasmatic membranes affects their integrity and formation of lipids peroxides increases their toxic extent.

Rapeseed lipids are deposited in sfero-somes which contains tri-glicerides, phosphatilserina, phosphatil inozolite and free fat acids. Sfero-somes are wrapped into a simple membrane made from phosphor-lipids and proteins called oleozines.

By applying Pearson correlations (table 3) I achieved optimization edible oil containing good fats recommended for consumer health, compared with olive oil is a food nutritionally balanced and ensures the longevity and vitality of nerve cells, thus avoiding immune system (3). According to a study conducted during 2014-2016 in Iasi Regional Oncology Institute have recorded the following situations:

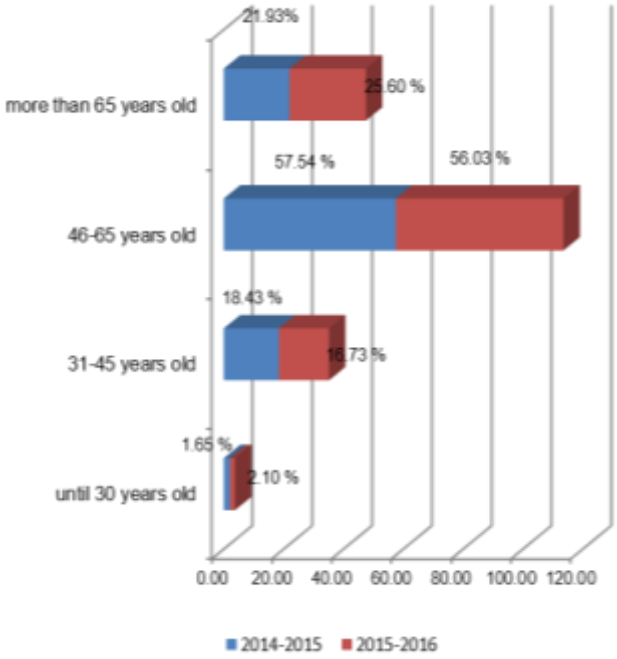

Figure 6 **The dynamic of patients after their ages**

Checkin to lowering the age of patients with cancer diseases reaching 6.73 to 18.43% at the

patients aged in 31-45 years old, followed by 46-65 years old, with a rate of 56,03- 57.54%, up from 21.93 to 25.60% at the patients older than 65 years. (4)

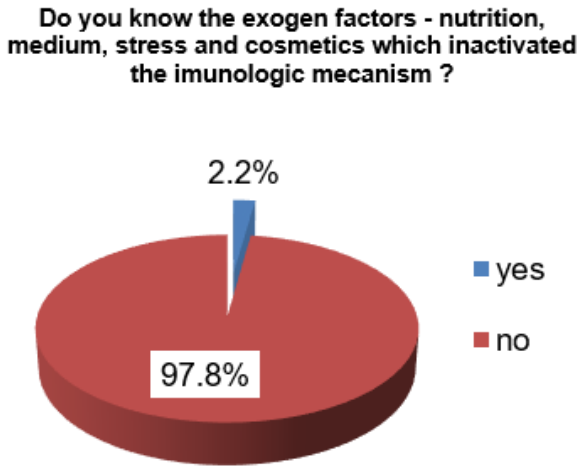

Figure 7 **Estimation the percents of patients which know the exogen factors(nutrition, medium, stress and cosmetis) that inactivated the imunologic mecanism**

Regarding awareness of the factors that can lead to alterations the health of patients, I have found that, in a major proportion of 97.8% do not know that their diet toghether with factors of environmental pollution and the stress of their daily lives and cosmetics are exogenous causes of diseases generators.

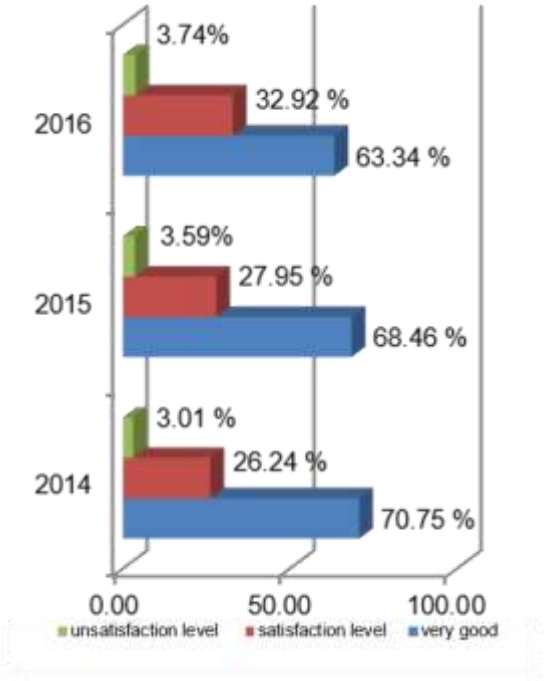

Figure 8 **The level of satisfaction of consumers**

Although population sickness rate increased from year to year and the main factor is diet, patients interviewed, answering the question "How do you rate food quality?" showed that only 3.01% to 3.74% of them are dissatisfied about the quality of their food, while 63.34 to 70.75% consider their food very good. Hence 60% of the population of North East has no education regarding healthy eating. (3)

CONCLUSIONS

1.Cumulative effect by conversion of carbohydrates into cholesterol generated to the early occurrence of chronic diseases like as: obesity, cardiovascular, carcinogenic.
2.Content of sucrose consumed by sweets agreed in N-E Region of Romania (pastry, ice cream, candy) is a driver of obesity and cancer. Moreover medical science tell us today that the sucrose allows spectacular evolution of cancerous cells, which represent a clear threat to the health of consumers of sweets.
3.The oils studied are used in the manufacturing of pastry, especially their hydrogenated and saturated form, after the eliminating the hydrogenation process, the essential nutrients such as linoleic acid, oleic acid. Consequently, pastry sweets contain mostly hydrogenated fats, which are in Class cholesterol lipids type.
4.The IRO Iasi Surveys show that over 60% of the investigated segment in the North-East of Romania, has no education regarding healthy eating.
5. A share of 97.8% patients surveyed did not know that their diet toghether with factors of environmental pollution and the stress of everyday life and cosmetic products are generating exogenous causes of diseases. This proportion is alarming, which requires prompt action by health education campaigns for consumers or patients.

ACKNOWLEGMENTS

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